Chapter 9

Personality as a Risk Factor for PTSD

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The stimulus for this chapter, as well as the book in which it appears, is that many people are likely to experience a traumatic event but few develop posttraumatic stress disorder (PTSD). According to a large national study, only 8% of traumatized men and 20% of traumatized women developed PTSD at some point after traumatic exposure (Kessler et al. 1995). Since the introduction of PTSD into the diagnostic nomenclature (American Psychiatric Association 1980), the field of traumatic stress studies has undergone a significant conceptual shift in how to interpret the low prevalence of PTSD given the high prevalence of trauma—from relatively strong deemphasis of the role of antecedent factors (e.g., Foy et al. 1984) to increasing recognition that the likelihood of PTSD varies as a function of characteristics of an individual prior to trauma (e.g., Breslau et al. 1991; Green et al. 1990). In fact, even the idea that PTSD is a *normative,* as opposed to abnormal, response to a traumatic stressor has been questioned (Yehuda and McFarlane 1995).

In this chapter, we review evidence relevant to the hypothesis that antecedent personality characteristics function as risk and protective factors in the development of PTSD or posttraumatic symptoms. The review is comprehensive but selective and favors

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empirical over case study material. We begin by discussing methodological issues that affect the interpretation of risk factors as causes. We next provide a theoretical framework for understanding personality and how it could function as a risk factor. We then review the literature on the association between personality and PTSD.

Our focus is on normal personality and personality disorder and not factors that might influence personality development (e.g., childhood emotional abuse). We do not address individual differences in general, such as those involving gender and education, despite the fact that these and many other characteristics are associated with increased or decreased risk of PTSD (e.g., Breslau et al. 1991; Green et al. 1990; Kessler et al. 1995; Kulka et al. 1990). Because of space considerations, we have excluded references to works on posttraumatic reactions other than PTSD; this means that we do not discuss some fascinating and insightful historical material by authors such as Brill and Beebe (1955). However, we encourage readers to consult older sources for clinically rich information.

Methodological Considerations

Risk factors are variables that are associated with the occurrence of a disease outcome. Sometimes the term *protective factor* is used to indicate a variable that is associated with relatively lower disease occurrence; here we use *risk factor* to apply both to variables that have risk-increasing effects and to those that have risk-decreasing effects. The term describes causes for an outcome as well as markers for causes, which are also known as *risk indicators* (Ahlbom and Norell 1990). The interpretation of a risk factor as a cause is difficult—especially if experimental control over a presumed cause is not possible, as in the case of traumatic exposure and PTSD. Virtually all of the literature on personality and PTSD comes from cross-sectional, correlational investigations in which personality and PTSD are measured simultaneously.

For example, Breslau and colleagues (1991) assessed a group of young adults for both personality and PTSD and found that

neuroticism was positively associated with lifetime PTSD. How are we to understand this association? One possible interpretation assigns a causal role to the personality factor: neuroticism may predispose traumatized individuals to develop PTSD. But in making this interpretation we must consider the issues involved in making a causal inference from nonexperimental data, an approach that represents a general problem in understanding the etiology of PTSD and other psychiatric disorders. We discuss these issues only briefly because they are likely to be familiar to most readers (see Cook and Campbell 1979 for an expanded discussion).

One issue is what is known as the "third variable" problem. Neuroticism may not influence reactions to trauma but may be associated with PTSD because some factors that influence likelihood of PTSD also influence personality development. A possible candidate is a prior trauma history, which is associated with increased likelihood of war zone–related PTSD (D. W. King et al. 1996). Note that we mention trauma history only for illustration and are not proposing that a prior trauma history causes increased neuroticism. Also note that in this case personality would be a risk indicator of PTSD.

Another issue is that temporal order may be difficult to infer from cross-sectional data, so that what appears to be a cause actually may be an outcome. Neuroticism may be associated with PTSD because having PTSD may make people more neurotic, or at least more likely to endorse items on a neuroticism scale. The problem may be especially likely in studies of chronic PTSD because having an Axis I disorder may have profound long-term effects (Friedman and Rosenheck 1996).

A related issue is that cross-sectional data are uninformative regarding longitudinal patterns of relationships among causes and effects. Personality may be both a cause and an effect of PTSD: neuroticism may predispose traumatized individuals to develop PTSD, chronic PTSD in turn may increase neuroticism, and this transactional relationship may recur over time. A cross-sectional snapshot of trauma survivors will fail to reveal the complex interplay.

In the absence of experimental control and random assignment,

these interpretive difficulties may be attenuated by the use of statistical and methodological procedures. Multivariate data analytic strategies increase control over potential third variables. The use of pretraumatic personality measures helps rule out problems of temporal order, and longitudinal designs permit inferences about transactional relationships. Nonetheless, interpretive difficulties may remain. All relevant variables may not have been measured and included in a study that uses multivariate statistical control. Also, third variables need to be considered, even in a study that uses pretraumatic personality measures (e.g., Card 1983; Schnurr et al. 1993). The ideal nonexperimental design incorporates multivariate statistical procedures, pretraumatic personality measures, and multiple posttraumatic assessments. We are unaware of any study that incorporates all of these features. Instead, most findings from studies of the relationship between personality and PTSD are open to multiple interpretations. We thus encourage readers to exercise caution in reading not just our review but also the articles on which it is based.

All of the foregoing methodological concerns arise from the fact that the entire body of literature on personality and PTSD is based on correlational data. An additional issue that should be kept in mind when reading this literature is the nature of the outcome that is being predicted. In general, a study that focuses on lifetime PTSD as an outcome provides information about the development of PTSD, whereas a study that focuses on current PTSD provides information about the maintenance of PTSD, especially if the study population has chronic PTSD. Both types of studies are useful, but they should be distinguished from each other. An exemplary approach to making this distinction comes from a set of studies by Breslau, who first examined risk factors for lifetime PTSD (Breslau et al. 1991) and then examined risk factors for chronicity among individuals who had lifetime PTSD (Breslau and Davis 1992). One drawback of this approach is the reduced statistical power for examining risk factors for chronicity; a variable that is actually predictive of both the development and the maintenance of PTSD may appear to be a risk factor for lifetime PTSD but not chronic PTSD because the sample size for the latter analysis will, of necessity, be

smaller. Nevertheless, it is unfortunate that, as far as we know, no other studies of risk factors for PTSD have followed a similar strategy. Thus, there is little clarity regarding the question of whether risk factors relevant to the development of PTSD differ from those relevant to the maintenance of the disorder.

What Is Personality?

Laypersons and professionals alike view personality as a constellation of attributes, or traits, that describe, explain, and predict an individual's behavior. Despite numerous differences among theorists about the particular organization and function of personality (see Lindzey et al. 1988), most agree that the trait concept implies consistency of behavior. In recent years, much of the research on personality has centered on determining the structure and organization of personality. The general consensus seems to be that personality structure can be described by a relatively small number of broad trait dimensions. The predominant number of dimensions is thought by many to be five—neuroticism, extraversion, intellect/openness to experience, conscientiousness, and agreeableness (Goldberg 1990; McCrae and Costa 1996).

Another topic in personality research is the question of continuity between normal personality and personality disorder. The implication of DSM-IV (American Psychiatric Association 1994) is that personality disorder is categorically distinct from normal personality, although evidence tends to support the utility of conceptualizing both normal and disordered personality as points along continua that represent lesser and greater amounts of basic trait dimensions. Watson and colleagues (1994) provide an excellent summary of the research on personality structure and how the structure relates to the study of psychopathology. They offer their own structural model, relating it to models of normal personality, and emphasize how many traits are relevant to Axis I and II disorders, (e.g., neuroticism consists of traits that include anxiety, depression, guilt, emotional lability, and somatic complaints). (For extended discussion, see the special issue of the *Journal of Abnormal Psychology* edited by Watson and Clark [1994].)

We mention these issues in basic personality research only to provide readers with a sense of the broader context in which relevant knowledge about personality and PTSD exists. Adequate discussion of these and other questions about the *structure* of personality is beyond the scope of this chapter and, we believe, unnecessary for understanding the relationship between personality and reactions to traumatic events. What is necessary, however, is familiarity with a model of *process*: how personality traits relate to behavior, which we define in terms of both observable actions and unobservable thoughts and feelings. Any discussion of the literature on personality as a risk factor for PTSD must be grounded in a reasonable explanation of how personality could increase or decrease the likelihood of PTSD following trauma.

As noted above, traditional conceptualizations have viewed personality as an organized set of traits that are consistently expressed in behavior across situations and over time. It is assumed that a high level of a trait leads to frequent behaviors reflecting that trait (e.g., a high level of shyness leads to extreme discomfort in and avoidance of social situations) and minimal participation in those situations that cannot be avoided. In fact, the correspondence between traits and behavior is far from perfect. There is, however, good consistency in intraindividual patterns of response to different situations, or "if . . . then . . . situation-behavior profiles" (Mischel and Shoda 1995). For example, a shy child who becomes irritable and hostile in social situations with peers but withdrawn and docile in social situations with adults is likely to display this pattern on repeated occasions.

Mischel and Shoda's (1995) theory of a "Cognitive-Affective Personality System" serves to explain the processes underlying individual differences in cognitive, affective, and behavioral reactions to situations. According to the theory, individual differences in behavior result from the interaction of five types of person variables, which they label "cognitive-affective units":

- *Encodings*, or categories for representing the self, people, events, and situations
- *Expectancies and beliefs*

- *Affects*, which encompass feelings, emotions, affective responses, and physiological reactions
- *Goals and values*
- *Competencies and self-regulatory plans*

Individuals may differ in both the cognitive-affective units themselves and the way in which these units are organized and relate to psychological features of situations. In particular, persons may differ predictably in if . . . then . . . situation-behavior profiles—that is, in the patterns of activation that occur in response to configurations of situational features across situations. Both the cognitive-affective units and their organization and activation are influenced by temperamental/genetic and situational influences. Mischel and Shoda provide support for their model by presenting the results of a computer-generated simulation that reproduced two of the major findings of personality research: variability in mean trait levels and stability of situation-behavior profiles.

Within a theory that is so fundamentally based on the distinctness of individuals, dispositions are a "characteristic cognitive affective processing structure that underlies, and generates, distinctive processing dynamics" (Mischel and Shoda 1995, p. 257). The structure refers to a characteristic set of units and their organization; the dynamics are the patterns of activation that are generated in response to particular situations. Individuals who have similar processing structures and processing dynamics have a similar processing disposition—what we would call a personality type. Yet the theory is not reductionistic. On the contrary, Mischel and Shoda emphasize the importance of understanding meaning: "The ultimate goal becomes to articulate the psychological structure that underlies this organization within the personality system" (p. 259).

One desirable property of the Cognitive-Affective Personality System is that the network formulation on which it is based is consistent with current theories of information processing, known as "connectionist" or "neural network" models (Davis 1992). Although this system is not explicitly proposed as a neural network model, such a formulation could be added, for example, to model

the development of activation patterns among cognitive-affective units. The network-based formulation also is consistent with Foa and colleagues' (1989) information processing model of PTSD, which is based on the concept of fear networks that contain fear-relevant stimulus and response information in memory. A fear structure could be understood within the Cognitive-Affective Personality System as a particular configuration of cognitive-affective units that is activated in response to situational features that have come to indicate danger to an individual.

Using the theoretical framework provided by Mischel and Shoda (1995), we offer the following example to illustrate how personality could affect reactions to trauma. Consider the hypothetical case of two women, each of whom is raped by a single, unknown perpetrator who breaks into her locked home and threatens her with a weapon. Each women encodes the situation as a threat to physical integrity in which she is powerless and experiences extreme fear as a result. However, because of temperamental and prior developmental experiences, the women differ in terms of the processing structure and processing dynamics of their individual personality systems. For one woman, situations that engender powerlessness and fear trigger anger and the expectation that no one will help her, so she avoids talking to others about the rape and buys a gun to protect herself in the future. For the other woman, situations that engender powerlessness and fear trigger the need to seek comfort from others and the expectation that others can help, so she reaches out to friends, goes to therapy, and joins a rape support group. We might expect that the first woman would be more likely than the second to develop PTSD. We also might expect the first woman to score low on a personality scale that measures need for affiliation, but this would not necessarily be true. In general, both women could have the same affiliative needs, but those needs could be differentially aroused in response to situational features.

This latter point has important implications for the study of how pretraumatic personality relates to posttraumatic outcomes. It suggests that simply measuring an overall amount of a trait in relation to PTSD—the strategy used in all of the studies we review—could lead to Type II errors in making inferences about that trait's poten-

tial as a risk factor. Keeping this point in mind, we now turn to the empirical literature on the association between personality and PTSD. We review first cross-sectional studies and then the few prospective studies completed to date. None of this literature lends itself to discussion in terms of cognitive-affective units. However, we return to Mischel and Shoda's (1995) model in our concluding comments in an attempt to suggest a basis for such integration in future research.

Review of the Evidence

Cross-Sectional Studies

Personality Profiles and PTSD

One line of investigation in the study of personality and PTSD is based on assessments of personality profiles with instruments such as the Minnesota Multiphasic Personality Inventory (MMPI; Hathaway and McKinley 1967) and the Millon Clinical Multiaxial Inventory (MCMI; Millon 1987). Profile studies represent a sizable literature on the relationship between personality and PTSD. Although the MMPI in particular is typically used as a diagnostic indicator of PTSD (e.g., Keane et al. 1984) and not as a way to assess risk for PTSD, we include cross-sectional MMPI and MCMI studies in our review and encourage readers to use caution in making causal judgments.

Studies of combat veterans and survivors of civilian trauma have generally shown that individuals with PTSD, relative to both well-adjusted and psychiatric control subjects, have MMPI profile elevations in the clinical range (i.e., T scores greater than 70; e.g., Engdahl et al. 1991; Keane et al. 1984; Koretzky and Peck 1990; Orr et al. 1990; but see also Silver and Salamone-Genovese 1991). With regard to MMPI profile shape, results of many studies have suggested that a 2-8-[7]/8-2-[7] configuration with an elevated F-scale score is characteristic of Vietnam combat veterans diagnosed with PTSD (e.g., Foy et al. 1984; Keane et al. 1984; Orr et al. 1990; but see

also Silver and Salamone-Genovese 1991). Similarly, investigators have often found a 2-8/8-2 modal code type for individuals with PTSD in clinical samples of both adult and child civilian trauma victims (e.g., Frederick 1985; Koretzky and Peck 1990). The 2-8/8-2 profile is associated with characteristics such as social introversion, interpersonal hypersensitivity, lack of meaningful social involvements, dependence, lack of assertiveness, irritability, resentfulness, and suspiciousness (Butcher and Williams 1992). Individuals with this code type are likely to fear losing control of their emotions and to deny undesirable emotions. They are unlikely to express themselves in a direct manner but may exhibit negative emotions during dissociative episodes. These characteristics are distinguished from the more acute symptoms that are also associated with this particular profile configuration (e.g., agitation, jumpiness, sleep disturbance, inability to concentrate).

Similar to MMPI findings, results from studies that have used the MCMI demonstrate that individuals with PTSD typically have elevated profiles, relative to those of individuals without PTSD (e.g., Robert et al. 1985). With striking consistency, the profile most commonly associated with PTSD has been the passive-aggressive/avoidant code type (2-8/8-2), with elevations in the clinically significant range (e.g., Hyer et al. 1990, 1994b; Robert et al. 1985).

The likelihood that the 2-8/8-2 MMPI/MCMI profile is a risk factor for PTSD is attenuated by findings that this profile accounts for a relatively small proportion of the code types in PTSD samples (e.g., Gaston et al. 1996). Also, the 2-8/8-2 type does not adequately characterize PTSD-positive veterans from earlier eras, such as World War II and Korean conflict former prisoners of war (POWs). Findings have consistently revealed a 1-2-[3]/2-1-[3] mean profile for this population (e.g., Engdahl et al. 1991; Sutker et al. 1991), suggestive of passive-dependence, hostility, irritability, self-consciousness, introversion, somatization, and repression (Butcher and Williams 1992). Furthermore, the 2-8/8-2 profile is not unique to PTSD, and the profile configurations of individuals with PTSD and psychiatric control subjects are often similar in shape, despite the relative elevations associated with PTSD (e.g., Foy et al. 1984; Keane et al. 1984).

A greater impediment to viewing the 2-8/8-2 profile or any other profile as a risk factor for PTSD is evidence suggesting that the profile elevations in PTSD reflect a change subsequent to the development of chronic PTSD. Combat veterans with current PTSD have higher mean profiles than combatants who have recovered from PTSD, although both groups have elevated profiles relative to former combatants with other psychiatric diagnoses or with no psychiatric disorders (Engdahl et al. 1991). Gaston and colleagues (1996) found that treatment-seeking civilians with chronic PTSD (i.e., duration of at least 6 months) had significantly higher MMPI profiles than did either treatment-seeking civilians with acute PTSD or non–treatment-seeking control subjects with panic disorder. The acute PTSD and panic groups did not differ, and the observed elevations in the acute group were just above the normal range (i.e., approximately 70). Also, 14% of the chronic PTSD group had a 2-8/8-2 profile, compared with 5% of the acute PTSD group (a difference for which we compute the probability to be $P < 0.05$).

Overall, data from the cross-sectional investigations that have used the MMPI and MCMI do not lend support to the possibility that personality is a risk factor for PTSD. All cross-sectional investigations make it difficult to infer etiological relationships, but the MMPI data actually suggest that personality changes result from the development of PTSD, at least in its chronic form.

Personality Disorder and PTSD

In this subsection, we review empirical studies on the association between PTSD and Axis II disorders. Selected studies examining PTSD and broadly defined childhood behavioral difficulties are included because of the role of such difficulties in the diagnosis of antisocial personality disorder and their relevance to the question of whether pretraumatic personality is associated with risk of PTSD.

Most studies that have examined the association between PTSD

and personality disorder have targeted antisocial personality disorder. Studies that included other Axis II disorders in an assessment battery are inconclusive. Kluznik and colleagues (1986) found no relationship between PTSD and antisocial or "labile" disorders in World War II former POWs. Blanchard and colleagues (1995) found no relationship between PTSD and antisocial, borderline, obsessive-compulsive, paranoid, avoidant, or dependent disorders, nor between PTSD and a summary measure of any personality disorder, in motor vehicle accident survivors. Wilson and Krauss (1985) found a few correlations between subscales of an inventory that measured PTSD and associated features and scales that measured antisocial, paranoid, and narcissistic behaviors, but only narcissism was correlated with all PTSD subscales.

In contrast, large epidemiological studies have documented an association between PTSD and antisocial personality disorder in both civilian (Helzer et al. 1987; Kessler et al. 1995) and veteran (Barrett et al. 1996; Kulka et al. 1990) samples. Also, Resnick and colleagues (1989) found an association between PTSD and adult antisocial behaviors in veterans. Only a few, much smaller, studies with less-representative samples have failed to find an association between PTSD and antisocial personality disorder (Blanchard et al. 1995; Green et al. 1990; Kluznik et al. 1986). It is interesting, however, that two of the studies that failed to find an association attempted to diagnose pretraumatic antisocial personality, albeit retrospectively (Blanchard et al. 1995; Green et al. 1990). This raises the question of whether the observed associations between PTSD and antisocial personality disorder are the result of PTSD's increasing the risk of subsequently developing antisocial personality disorder. Attempting to answer the question actually raises several others because of complex relationships among childhood behavior problems, trauma, and adult antisocial behavior.

Retrospectively assessed childhood behavior problems have been linked to both PTSD (Barrett et al. 1996; Helzer et al. 1987; Kulka et al. 1990) and traumatic exposure (Barrett et al. 1996); only Resnick and colleagues (1989) failed to find either association. Sorting out the potential interrelationships among these variables is best accomplished by structural equation modeling, which D. W.

King and colleagues (1996) used to reanalyze data from the National Vietnam Veterans Readjustment Study (NVVRS; Kulka et al. 1990). The reanalysis showed that for male veterans, childhood antisocial behavior did not increase the likelihood of PTSD directly; it did, however, increase the likelihood indirectly by increasing the likelihood of war zone exposure, which in turn increased the likelihood of PTSD. There was no relationship between childhood antisocial behavior and exposure or PTSD in female veterans. It is unfortunate that the reanalysis did not include a measure of premilitary antisocial personality disorder. Nevertheless, if we assume that childhood behavior problems provide some indication of premilitary antisocial personality characteristics, the structural model may be interpreted as showing that pretraumatic antisocial personality is a risk factor for PTSD in that it increases the likelihood of traumatic exposure.

The observed association between PTSD and antisocial personality disorder cannot completely be explained as a function of pretraumatic personality, however. Additional data on male veterans implicate PTSD as a risk factor for adult antisocial behavior through pathways independent of the influence of pretraumatic antisocial behavior and its association with war zone exposure and PTSD. Barrett and colleagues (1996) found that PTSD was associated with increased likelihood of adult antisocial behavior even when they controlled for childhood behavior problems and war zone exposure. PTSD also was associated with increased likelihood of antisocial personality disorder when war zone exposure, but not childhood behavior problems, was controlled (presumably because of the necessary overlap between childhood problems and adult disorder). In combination, Barrett et al.'s and King et al.'s data on antisocial personality disorder and PTSD suggest a pattern of mutual influence over time.

With respect to the question of whether personality disorder is a risk factor for PTSD, it appears that antisocial personality could be, but that its relationship to PTSD is transactional: pretraumatic antisocial behavior may be a risk factor for PTSD, but PTSD in turn may lead to increases in antisocial behavior. There are insufficient data to permit conclusions about other personality disorders.

Specific Traits as Correlates of PTSD

In this subsection, we review empirical studies on the relationship between personality dimensions, or traits, and PTSD. The review is organized around three of the four trait dimensions in the hierarchical structure of personality traits proposed by Watson and colleagues (1994): *neuroticism,* or negative emotionality; *extraversion,* or positive emotionality; and *conscientiousness,* or constraint. (We did not find PTSD literature on the fourth dimension, *agreeableness.*) Table 9–1 illustrates how we have categorized traits according to these dimensions.

The terms *neuroticism, negative affectivity,* and *negative emotionality* all have been used to describe a broad personality dimension that has been proposed as a likely risk factor for PTSD because the dimension reflects sensitivity to negative stimuli (Clark et al. 1994). We use the term neuroticism here because it appears most often in the PTSD literature. Despite incomplete agreement on the particular component traits that are subsumed under this dimension, neuroticism is thought to consist of mood and nonmood components (Clark et al. 1994). In addition to neuroticism, components

Table 9–1. Categorization of personality traits examined in research on posttraumatic stress disorder

Personality dimension	Trait
Neuroticism/negative affectivity/ negative emotionality	Neuroticism Trait anxiety Hardiness Hostility Pessimism (attributional style, locus of control) Alexithymia
Extraversion/positive affectivity/ positive emotionality	Extraversion (introversion) Sensation seeking
Conscientiousness/constraint	Constraint/impulsivity
Agreeableness	None

Source. The dimensional model and rationale for classification are drawn from Clark et al. 1994 and Watson et al. 1994.

that have been explored in PTSD studies (and about which there seems to be generally good agreement as to their relationship to neuroticism) are trait anxiety, hardiness, hostility, and pessimism/attributional style. Our discussion of this dimension includes reference to alexithymia, given data about its relationship to neuroticism (Wise and Mann 1994), and locus of control, given its relationship to attributional style.

With the exception of Mayou and colleagues (1993), investigators who have studied clinical and nonclinical samples of combat and civilian trauma survivors have found that PTSD is positively correlated with neuroticism as measured by a variety of instruments (e.g., Breslau et al. 1991; Davidson et al. 1987; Hyer et al. 1994a; Kuhne et al. 1993; McFarlane 1988a; Weiss et al. 1995). Results of one longitudinal study suggest that higher levels of neuroticism are related to chronicity as well. McFarlane (1988b) found that individuals with chronic PTSD had significantly higher neuroticism scores than individuals with histories of only acute PTSD. Neuroticism was a better predictor of PTSD than level of trauma exposure in this study, accounting for an increasing proportion of the variance over time, while the contributions of trauma exposure variables progressively decreased. (Breslau and Davis [1992], who found that neuroticism was related to increased likelihood of both chronic and acute subtypes, did not report a direct comparison of differences in neuroticism between these subtypes.)

High trait anxiety also is related to PTSD in treatment-seeking and non–treatment-seeking adults and children (e.g., Blanchard et al. 1995; Lonigan et al. 1994; Sutker et al. 1991), although individuals with PTSD sometimes do not differ from psychiatric control subjects in terms of trait anxiety (e.g., Chemtob et al. 1994; Orr et al. 1990). Moreover, differences between PTSD and no-PTSD groups in trait anxiety scores have been found to be greater than differences in other indices, such as state anxiety, depression, and MMPI scale scores (Sutker et al. 1991). In one exception to the findings on trait anxiety, Shalev and colleagues (1996) found that individuals with PTSD 6 months after exposure to trauma differed in levels of state anxiety, but not trait anxiety, as assessed 1 week posttrauma.

Low hardiness has been linked to PTSD as well. L. A. King and colleagues (1998), in their reanalysis of the NVVRS dataset, used structural equation modeling to test a multivariate model of PTSD etiology that incorporated war zone stressors and postwar resilience and recovery variables, including hardiness. Low hardiness was a strong PTSD predictor relative to other resilience/recovery and war zone stressor variables examined. For both men and women, hardiness had a direct negative effect on PTSD, as well as a robust indirect effect, particularly through its association with more adequate social support. Sutker and colleagues (1995) performed double cross-validated discriminant function analyses and found that commitment, one of the three hardiness elements, was a consistent predictor of PTSD, accounting for 26% of the variance. The remaining two elements, sense of control and perception of change as challenging, also differentiated individuals with and without PTSD, though they failed to make any additional, substantive contributions to the discriminant function.

The interpretation of hostility as a risk factor for PTSD is especially difficult because irritability and anger are diagnostic indicators of the disorder. It is not surprising that many investigators have found that PTSD is associated with increased levels of hostility (e.g., Chemtob et al. 1994; Lasko et al. 1994) or lower levels of overcontrolled hostility (Silver and Salamone-Genovese 1991). Results of some studies suggest that PTSD may be differentially related to components of hostility. Lasko and colleagues (1994) found that individuals with PTSD scored significantly higher than individuals without PTSD on a measure of angry reactions but not on a measure of angry temperament. Similarly, Beckham and colleagues (1996) found that treatment-seeking PTSD-positive military veterans exhibited more paraverbal hostility (e.g., speaking in an irritated tone) than did non–treatment-seeking veterans without PTSD during administration of a behavioral hostility measure. However, no significant differences were noted with regard to levels of verbal hostility (e.g., direct verbal confrontation of interviewer).

Peterson and Seligman (1984) conceptualize pessimism in terms of attributional style, an individual's typical pattern of explana-

tions for the events he or she has experienced. A pessimistic attributional style—one that is internal, global, and stable for negative events and the opposite for positive events—has been linked to depression (Peterson and Seligman 1984). Aspects of a pessimistic style are associated with PTSD in Vietnam veterans (McCormick et al. 1989), children (Wolfe et al. 1989), and college students (Falsetti and Resick 1995); additionally, in a study of disaster survivors, a positive attributional style was linked to increased support, which in turn was linked to decreased PTSD (Joseph et al. 1993a). In the one study to report contradictory results, Mikulincer and Solomon (1988) found that increases in PTSD symptoms over a 1-year interval were related to external and stable attributions for negative events and external attributions for positive events. The authors suggested that the unexpected pattern of findings may reflect a denial of responsibility among veterans with PTSD, but this explanation does not account for McCormick and colleagues' (1989) opposite findings with veterans. Joseph and colleagues (1993b) provide another reason for the discrepancy—a questionable measurement strategy used by Mikulincer and Solomon. Given the preponderance of the evidence, it is reasonable to conclude that PTSD is associated with a negative attributional style. Falsetti and Resick's (1995) data, however, raise questions about the specificity of the association between attributional style and PTSD relative to depression. These authors did not find any differences in attributional style between individuals with PTSD only, depression only, and both PTSD and depression.

Locus of control relates to the internality/externality component of attributional style. Investigations have consistently shown that PTSD is associated with scores indicating an external locus of control (e.g., Frye and Stockton 1982; Solomon et al. 1988; Weiss et al. 1995). Longitudinal data indicate that shifts toward internal locus of control are correlated with decreases in PTSD symptoms (Solomon et al. 1988). One interesting study showed that locus of control and PTSD were correlated only for soldiers who experienced an acute stress reaction under conditions of low battle intensity and not for those whose acute reaction occurred under conditions of high battle intensity (Solomon et al. 1989).

The data on PTSD and locus of control may seem to contradict the data linking PTSD with an attributional style that is characterized by internal attributions. When interpreting these seemingly contradictory findings, it is important to remember that a pessimistic attributional style involves making internal attributions for negative events and external attributions for positive events. As it turns out, the scale used in all of the investigations of PTSD and locus of control, Rotter's I-E scale (Rotter 1966), appears to measure locus of control for *positive* events (Brewin and Shapiro 1984). Thus, relatively external scores on this scale indicate perceptions of not being able to control the occurrence of desired outcomes.

Two studies have examined alexithymia in relation to PTSD. Zeitlin and colleagues (1993) found that alexithymia was positively related to degree of trauma exposure (i.e., number of assaults experienced), but they failed to find differences between rape victims with and without PTSD in degree of alexithymia. The failure to find a difference between PTSD and no-PTSD groups may have been not only because of the small sample size in this study but also because 8 of the 12 no-PTSD rape victims had a lifetime history of PTSD, even though they did not meet the criteria of this disorder at the time of assessment. In contrast, Yehuda and colleagues (1997) reported that PTSD and no-PTSD groups of non–treatment-seeking Holocaust survivors did not differ in amount of trauma exposure and that the PTSD group had relatively higher alexithymia scores. Not surprisingly, alexithymia was found to be most strongly related to the avoidance and hyperarousal symptoms of PTSD. This study is particularly noteworthy for its use of standardized diagnostic measures and its attention to potential confounding variables. With regard to the latter, individuals with concurrent Axis I disorders previously found to be associated with alexithymia were excluded from the subject pool.

Extraversion is a personality dimension that has been hypothesized by Clark and colleagues (1994) to be specific for depression, as compared with neuroticism, which is more broadly related to distress disorders. Individuals high in extraversion (the term used in the PTSD literature) or positive affectivity (a term often used in the personality literature) would be expected to display character-

istics such as gregariousness, leadership, enjoying being the center of attention, cheerfulness, and seeking out stimulating experiences (Watson et al. 1994).

Extraversion has been linked to lower levels of PTSD in several studies, although the association seems to be less robust than the association between PTSD and neuroticism. Davidson and colleagues (1987) reported that World War II/Korean conflict veterans with PTSD were significantly more introverted than the age-matched nonpsychiatric control subjects, including both combat and noncombat veterans. The older veterans with PTSD also were more introverted than the Vietnam veterans with PTSD. Based on retrospective assessments, McFarlane (1988a, 1988b) found that Australian firefighters with PTSD were more introverted before the trauma than were their nonaffected counterparts. However, overall results indicated that extraversion played a much less prominent role than neuroticism in the longitudinal course of the disorder. Similarly, Kuhne and colleagues (1993), comparing groups of veterans with and without PTSD who were seeking treatment for substance abuse, found a much larger difference in neuroticism than in extraversion; the lower extraversion scores in the PTSD group were statistically significant, but not when the Bonferroni adjustment was made.

In contrast to their findings on neuroticism, Breslau and colleagues' (1991) findings on extraversion failed to show an association with PTSD. Hyer and co-workers (1994a) also found that among individuals with PTSD, symptom severity was correlated with neuroticism but not with extraversion. Reconciling these two studies with the data linking PTSD and introversion is complicated by the finding that in Breslau et al.'s sample, extraversion was related to increased likelihood of traumatic exposure (Breslau et al. 1991, 1995). If anything, the relationship between extraversion and exposure on the one hand and exposure and PTSD on the other should lead to extraversion's being related to PTSD, although indirectly, through exposure.

Results on sensation seeking, another component trait of extraversion, in relation to PTSD also are difficult to interpret. Sensation seeking has been linked to both favorable and unfavorable

PTSD outcomes. PTSD was unrelated to a global measure of sensation seeking in two studies (Orr et al. 1990, 1993), but in one of these studies, Vietnam veterans with PTSD scored higher than anxious combat control subjects on subscales for experience seeking and boredom susceptibility and higher than healthy combat control subjects on boredom susceptibility (Orr et al. 1990). Higher scores on the same global measure of sensation seeking used in Orr et al.'s studies were unrelated to PTSD symptoms in Israeli combat veterans (Solomon et al. 1995). However, scores on the global measure were related to lower PTSD symptoms among former POWs, a pattern of findings that led the authors to suggest that sensation seeking may function as a buffering variable under conditions of high stress.

Individuals high on the personality dimension of conscientiousness, or constraint, plan carefully before acting, are reliable and self-disciplined, have high achievement aspirations, respect authority, and avoid risky or dangerous situations (Watson et al. 1994). Only a few studies of Vietnam veteran samples have examined how PTSD relates to this dimension, and the majority of data show little relationship. In one study (Kuhne et al. 1993), groups of veterans with PTSD and those without PTSD did not differ in constraint, but the PTSD group had higher impulsivity scores (although not when Bonferroni adjustment was made). In another study, there were no differences in behavioral indicators of impulsivity between PTSD, psychiatric, and healthy combat groups (Chemtob et al. 1994). In a third study, constraint was correlated with PTSD symptoms on only one of the four PTSD assessment instruments used by the investigators (Hyer et al. 1994a).

Findings from cross-sectional studies of relationships between PTSD and specific traits show clear associations of this disorder with neuroticism and its components. The evidence regarding extraversion and constraint is equivocal and shows a lack of uniformity in how the component traits of these dimensions relate to PTSD. The data do not permit strong inferences about the extent to which the observed associations are unique to PTSD versus more general to other psychiatric disorders. The data also do not permit strong inferences about the extent to which these associations re-

flect the influence of PTSD on personality. Neuroticism has been suggested not just as an outcome but also as a vulnerability factor for depression (Clark et al. 1994); the same is likely true for PTSD.

Studies With Antecedent Personality Measures

Only a few studies have examined the association between personality and PTSD with measures of personality that were obtained prior to traumatic exposure. All of these studies assessed combat-related PTSD in male military veterans.

Card (1983) used archival data from Project TALENT to examine the relationship between personality traits at age 15 years and PTSD assessed at age 36 in a group of Vietnam veterans. Of 10 personality variables assessed in adolescence, only low self-confidence was associated with higher PTSD symptoms at age 36. The lack of association between PTSD and other variables is difficult to interpret because of the restricted content validity of the PTSD scale, which was constructed post hoc from items that did not fully capture diagnostic criteria for the disorder (e.g., there were no items assessing intrusive memories, flashbacks, or avoidance of traumatic reminders). (The limitations of the scale are perhaps best indicated by the actual difference of 3 points between Vietnam-theater and Vietnam-era veterans, despite a theoretical range of 16 to 80.)

Lee and colleagues (1995) presented data based on a longitudinal assessment of World War II combat veterans who were first studied while undergraduates at Harvard University. Like Card, Lee et al. used a PTSD measure that was constructed post hoc, but the latter's measure appears to have adequate content validity. Psychological soundness in college, a general measure of emotional/psychological difficulties, was not related to PTSD symptoms assessed immediately after the war. Also, psychological defenses from ages 20 to 47 and poor psychosocial adjustment from ages 30 to 44, which might be loosely interpreted as reflecting personality variables, were not related to PTSD symptoms at age 65 (but they were related to neuroticism at age 65).

Schnurr and colleagues (1993) examined the relationship be-

tween personality and PTSD by reviewing college MMPI profiles of Vietnam combat and Vietnam-era veterans from the Dartmouth College classes of 1967 and 1968. Group means on the MMPI scales were all within normal limits. The Structured Clinical Interview for DSM-III-R (Spitzer et al. 1987) was used to assess lifetime PTSD, as well as to subdivide participants according to whether they met full or subthreshold criteria for the disorder or only had a lifetime history of some PTSD symptoms. In contrast to the studies discussed above, this study found that premilitary personality scores were related to PTSD symptomatology. Hypochondriasis, Psychopathic Deviate, Masculinity–Femininity, and Paranoia scale scores all predicted lifetime PTSD symptoms (full, subthreshold, or symptoms), with Psychopathic Deviate and Masculinity–Femininity being the strongest predictors. Furthermore, Social Introversion was found to be the best predictor of PTSD subclassification, although depression and hypomania also distinguished among PTSD subgroups. There was a nonlinear relationship between PTSD subgroup and Social Introversion. Veterans who developed only PTSD symptoms were more introverted than veterans who developed either full PTSD or subthreshold PTSD, but those in the full group were more introverted than those in the subthreshold group. Control for amount of combat exposure failed to have a significant impact on any of the findings.

Schnurr et al. (1993) suggested that, given the normal range of mean MMPI scale scores, combat-related PTSD symptomatology is positively associated with the following personality features (organized in terms of the three broad personality dimensions discussed above): dissatisfaction, gloominess, irritability (neuroticism); shyness, withdrawal (extraversion); and impulsivity, inhibition, conscientiousness (constraint). Normal-range social introversion scores, which distinguished the PTSD subgroups, may reflect characteristics of extraversion and constraint: shyness, withdrawal, and inhibition, as well as impulse-control problems and extraversion.

These findings thus implicate not just neuroticism but also extraversion and constraint in the etiology of PTSD. Reconciling these findings with the null results of Card (1983) and Lee et al.

(1995), one could speculate that the use of validated measures of both PTSD and personality by Schnurr et al. (1993) provided a more sensitive test of the relationship between personality and PTSD than was provided in the other two studies. Of course, replication of these results in future studies with pretraumatic personality measures is critically needed. This one study, however, lends support to the view that personality is a true risk factor for PTSD and not merely a risk marker or outcome of the disorder.

Conclusion

Despite the lack of data that permit strong inferences about the relationship between antecedent personality factors and the development of PTSD, some conclusions are possible.

First, there is ample evidence linking personality and PTSD. The most striking finding is that neuroticism and its component traits are consistently associated with PTSD. Virtually all of the evidence is cross-sectional and retrospective, but some is not.

Second, personality could function as a risk factor for PTSD. We presented a model of how personality could influence reactions to trauma (Mischel and Shoda 1995) and discussed several mediating factors, including an individual's immediate reactions to a stressor, cognitive processing of the stressor, and ability to enlist social support for help in dealing with the stressor or its aftermath. In addition to influencing how individuals react to traumatic events, personality may affect the risk of PTSD by influencing risk of exposure to traumatic events. Breslau and colleagues (1995) followed a sample of young adults for 3 years and found that neuroticism and extraversion measured at the beginning of the study were associated with increased risk of traumatic exposure during the observation period, even when the effects of traumatic exposure prior to the study and other variables were controlled. Neuroticism and extraversion also were associated with increased risk of exposure in cross-sectional analyses to predict lifetime exposure (Breslau et al. 1991, 1995).

So, even though virtually all of the evidence comes from cross-

sectional studies that are inherently ambiguous with regard to issues of causality, we believe it is likely that personality plays a role in the etiology of PTSD—a conclusion that has significant implications for both research and practice. We will never fully understand the etiology of PTSD if we fail to correctly specify the way that pretraumatic factors influence reactions to trauma. We also will never be able to predict PTSD very well if we sweep the variation in PTSD prevalence due to pretraumatic variables into an error term. Poor predictive power, in turn, will hinder efforts at either primary or secondary prevention.

However, more is needed than simply recognizing and investigating the role played by pretraumatic personality and other pretraumatic variables in the development of PTSD. Because of its correlational nature, this research should be conducted with increased rigor and should use measures collected prior to traumatization whenever possible—for example, by focusing on cohorts such as military personnel who have a high likelihood of traumatic exposure. Greater attention to the distinction between the development of PTSD and its maintenance is especially important; we have virtually no information about how personality factors relate to recovery. Multiple posttraumatic assessments of both personality and PTSD will further our understanding of how these variables relate to one another over time. Lastly, research is needed to bridge our understanding of personality and other risk factors for PTSD to diathesis-stress models of depression and other psychiatric disorders. It would be helpful to know whether specific personality constructs operate similarly or differently in affecting risk of PTSD versus other disorders. For example, neuroticism, implicated herein as a risk factor for PTSD, is a likely risk factor for depression and other anxiety disorders (Clark et al. 1994).

Perhaps the greatest challenge for future research is the need to specify *how* personality operates as a risk factor—that is, how does neuroticism or any other aspect of personality influence the processing of traumatic material? The model of personality offered by Mischel and Shoda (1995) offers much promise in this regard, and more than is offered by traditional trait-behavior theory. At present, data on the cognitive and affective correlates of PTSD do not

conclusively demonstrate that pretraumatic differences in cognitive-affective units are responsible for the development of PTSD in traumatized individuals. What is clear, though, is that individuals with and without PTSD differ in terms of all five types of cognitive-affective units. We offer the following examples.

With respect to *encodings,* PTSD is correlated with negative views of self and others (Dutton et al. 1994). *Expectancies and beliefs* also vary as a function of one's PTSD status. Janoff-Bulman (1992) has proposed that trauma violates basic assumptions about one's safety, the fairness of the world, and the predictability of aversive events. *Affects,* especially physiological reactions, differ as well (Prins et al. 1995). Shalev and colleagues (1996) found that peritraumatic dissociation measured in the week after a traumatic event predicted PTSD at 6 months; peritraumatic dissociation, in turn, has been shown to be related to the personality constructs of shyness and inhibition (Marmar et al. 1996). Although little is known about the *goals and values* associated with PTSD, a sense of foreshortened future—a diminished future orientation—is one of the symptom criteria for PTSD. In contrast, much more is known about PTSD and coping strategies, which encompass *competencies and self-regulatory plans.* Relative to individuals without PTSD, those with PTSD are more likely to use nonoptimal strategies such as emotion-focused and avoidant coping (e.g., Valentiner et al. 1996). Interesting evidence of relationships among coping strategies and personality characteristics comes from a study of PTSD patients in whom unique associations between particular strategies and personality traits were found (Hyer et al. 1996). For example, although antisocial and passive-aggressive characteristics were positively correlated with confrontive coping, antisocial characteristics were negatively correlated with escape-avoidance strategies, and passive-aggressive characteristics were positively associated with escape-avoidance.

The cross-sectional nature of these examples and of virtually all of the relevant data prevents us from knowing to what extent the differences associated with PTSD are outcomes rather than predisposing variables. Indeed, it is not just plausible but also likely that cognitive affective units and their organization are altered by the

development of PTSD. Nevertheless, pretraumatic differences in cognitive affective units and their organization could function within the theoretical framework provided by Mischel and Shoda (1995) to explain how personality could affect reactions to trauma. It would be helpful if future research were to employ measurement strategies that operationalize cognitive affective units in addition to, or even rather than, traditional trait measures.

Our conclusions about the role of personality in the etiology of PTSD may be viewed in the broader context of diathesis-stress models for psychiatric disorders (e.g., Meehl 1962). For example, a recent review of the literature on personality as diathesis for depression begins with the assertion, "Most people do not become clinically depressed even when confronted with ostensibly serious stressors" (Coyne and Whiffen 1995, p. 358). If we substituted the words "develop PTSD" for "become clinically depressed" and "traumatic" for "ostensibly serious," we would have something akin to the premise of this chapter. Coyne and Whiffen (1995) state, "*Diathesis-stress* models of depression are widely seen as a significant advance over the simplistic assumption that all persons are equally vulnerable to depression" (p. 358, emphasis in original). Is the same true for PTSD? During the 1980s, the answer probably would have been a relatively strong "no." Today—many data later—we hope the answer would be at least a modest "yes."

References

Ahlbom A, Norell S: Introduction to Modern Epidemiology. Chestnut Hill, MA, Epidemiology Resources, 1990

American Psychiatric Association: Diagnostic and Statistical Manual of Mental Disorders, 3rd Edition. Washington, DC, American Psychiatric Association, 1980

American Psychiatric Association: Diagnostic and Statistical Manual of Mental Disorders, 4th Edition. Washington, DC, American Psychiatric Association, 1994

Barrett DH, Resnick HS, Foy DW, et al: Combat exposure and adult psychosocial adjustment among U.S. Army veterans serving in Vietnam, 1965–1971. J Abnorm Psychol 105:575–581, 1996

Beckham JC, Roodman AA, Barefoot JC, et al: Interpersonal and self-reported hostility among combat veterans with and without posttraumatic stress disorder. J Trauma Stress 9:335–342, 1996

Blanchard EB, Hickling EJ, Taylor AE, et al: Psychiatric morbidity associated with motor vehicle accidents. J Nerv Ment Dis 183:495–504, 1995

Breslau N, Davis GC: Posttraumatic stress disorder in an urban population of young adults: risk factors for chronicity. Am J Psychiatry 149: 671–675, 1992

Breslau N, Davis GC, Andreski P, et al: Traumatic events and posttraumatic stress disorder in an urban population of young adults. Arch Gen Psychiatry 48:216–222, 1991

Breslau N, Davis GC, Andreski P: Risk factors for PTSD-related traumatic events: a prospective analysis. Am J Psychiatry 152:529–535, 1995

Brewin CR, Shapiro DA: Beyond locus of control: attributions of responsibility for positive and negative outcomes. Br J Psychol 75:43–49, 1984

Brill NQ, Beebe GW: A Follow-up Study of War Neuroses. Washington, DC, Veterans Administration, 1955

Butcher JN, Williams CL: Essentials of MMPI-2 and MMPI-A Interpretation. Minneapolis, University of Minnesota Press, 1992

Card JJ: Lives After Vietnam: The Personal Impact of Military Service. Lexington, MA, Lexington Books, 1983

Chemtob CM, Hamada RS, Roitblat HL, et al: Anger, impulsivity, and anger control in combat-related posttraumatic stress disorder. J Consult Clin Psychol 62:827–832, 1994

Clark LA, Watson D, Mineka S: Temperament, personality, and the mood and anxiety disorders. J Abnorm Psychol 103:103–116, 1994

Cook TD, Campbell DT: Quasi-Experimentation. Chicago, IL, Rand McNally, 1979

Coyne JC, Whiffen VE: Issues in personality as diathesis for depression: the case of sociotrophy-dependency and autonomy-self-criticism. Psychol Bull 118:358–378, 1995

Davidson J, Kudler H, Smith R: Personality in chronic post-traumatic stress disorder: a study of the Eysenck Inventory. J Anxiety Disord 1:295–300, 1987

Davis S (ed): Connectionism: Theory and Practice. New York, Oxford University Press, 1992

Dutton MA, Burghardt KJ, Perrin SG, et al: Battered women's cognitive schemata. J Trauma Stress 7:237–255, 1994

Engdahl BE, Speed N, Eberly RE, et al: Comorbidity of psychiatric disorders and personality profiles of American World War II prisoners of war. J Nerv Ment Dis 179:181–187, 1991

Falsetti SA, Resick PA: Causal attributions, depression, and posttraumatic stress disorder in victims of crime. J Appl Soc Psychol 25: 1027–1042, 1995

Foa EB, Steketee G, Rothbaum BO: Behavioral/cognitive conceptualizations of posttraumatic stress disorder. Behavior Therapy 20:155–176, 1989

Foy DW, Sipprelle RC, Rueger DB, et al: Etiology of posttraumatic stress disorder in Vietnam veterans: analysis of premilitary, military, and combat exposure influences. J Consult Clin Psychol 52:79–87, 1984

Frederick CJ: Children traumatized by catastrophic situations, in Posttraumatic Stress Disorder in Children. Edited by Eth S, Pynoos RS. Washington, DC, American Psychiatric Association, 1985, pp 71–99

Friedman MJ, Rosenheck RA: PTSD as a persistent mental illness, in Handbook for the Treatment of the Seriously Mentally Ill. Edited by Soreff SM. Seattle, WA, Hogrefe & Huber, 1996, pp 369–389

Frye JS, Stockton RA: Discriminant analysis of posttraumatic stress disorder among a group of Vietnam veterans. Am J Psychiatry 139:52–56, 1982

Gaston L, Brunet A, Koszycki D, et al: MMPI profiles of acute and chronic PTSD in a civilian sample. J Trauma Stress 9:817–832, 1996

Goldberg LR: An alternative "description of personality": the Big-Five factor structure. J Pers Soc Psychol 59:1216–1229, 1990

Green BL, Grace MC, Lindy JD, et al: Risk factors for PTSD and other diagnoses in a general sample of Vietnam veterans. Am J Psychiatry 147:729–733, 1990

Hathaway SR, McKinley JC: Minnesota Multiphasic Personality Inventory Manual. New York, Psychological Corporation, 1967

Helzer JE, Robins LN, McEvoy L: Post-traumatic stress disorder in the general population: findings of the Epidemiologic Catchment Area Survey. N Engl J Med 317:1630–1634, 1987

Hyer L, Woods MG, Boudewyns PA, et al: MCMI and 16-PF with Vietnam veterans: profiles and concurrent validation of MCMI. Journal of Personality Disorders 4:391–401, 1990

Hyer L, Braswell L, Albrecht W, et al: Relationship of NEO-PI to personality styles and severity of trauma in chronic PTSD victims. J Clin Psychol 50:699–707, 1994a

Hyer L, Davis H, Albrecht W, et al: Cluster analysis of MCMI and MCMI-II on chronic PTSD victims. J Clin Psychol 50:502–515, 1994b

Hyer L, McCranie EW, Boudewyns PA, et al: Modes of long-term coping with trauma memories: relative use and associations with personality among Vietnam veterans with chronic PTSD. J Trauma Stress 9:299–316, 1996

Janoff-Bulman R: Shattered Assumptions: Towards a New Psychology of Trauma. New York, Free Press, 1992

Joseph S, Brewin CR, Yule W, et al: Causal attributions and posttraumatic stress in adolescents. J Child Psychol Psychiatry 34:247–253, 1993a

Joseph S, Yule W, Williams R: Post-traumatic stress: attributional aspects. J Trauma Stress 6:501–513, 1993b

Keane TM, Malloy PF, Fairbank JA: Empirical development of an MMPI subscale for the assessment of combat-related posttraumatic stress disorder. J Consult Clin Psychol 52:888–891, 1984

Kessler RC, Sonnega A, Bromet E, et al: Posttraumatic stress disorder in the National Comorbidity Survey. Arch Gen Psychiatry 52:1048–1060, 1995

King DW, King LA, Foy DW, et al: Prewar factors in combat-related posttraumatic stress disorder: structural equation modeling with a national sample of female and male Vietnam veterans. J Consult Clin Psychol 64:520–531, 1996

King LA, King DW, Fairbank JA, et al: Resilience/recovery factors in posttraumatic stress disorder among male and female Vietnam veterans: hardiness, postwar social support, and additional stressful life events. J Pers Soc Psychol 74:420–434, 1998

Kluznik JC, Speed N, Van Valkenburg C, et al: Forty-year follow-up of United States prisoners of war. Am J Psychiatry 143:1443–1446, 1986

Koretzky MB, Peck AH: Validation and cross-validation of the PTSD subscale of the MMPI with civilian trauma victims. J Clin Psychol 46: 296–300, 1990

Kuhne A, Orr SP, Baraga E: Psychometric evaluation of post-traumatic stress disorder: the Multidimensional Personality Questionnaire as an adjunct to the MMPI. J Clin Psychol 49:218–225, 1993

Kulka RA, Schlenger WE, Fairbank JA, et al: Trauma and the Vietnam War Generation. New York, Brunner/Mazel, 1990

Lasko NB, Gurvits TV, Kuhne AA, et al: Aggression and its correlates in Vietnam veterans with and without chronic posttraumatic stress disorder. Compr Psychiatry 35:373–381, 1994

Lee KA, Vaillant GE, Torrey WC, et al: A 50-year prospective study of the psychological sequelae of World War II combat. Am J Psychiatry 152: 516–522, 1995

Lindzey G, Hall CS, Manosevitz M: Theories of Personality: Primary Sources and Research. Malabar, FL, Robert E Krieger, 1988

Lonigan CJ, Shannon MP, Taylor CM, et al: Children exposed to disaster, II: risk factors for the development of post-traumatic symptomatology. J Am Acad Child Adolesc Psychiatry 33:94–105, 1994

Marmar CR, Weiss DS, Metzler TJ, et al: Characteristics of emergency services personnel related to peritraumatic dissociation during critical incident exposure. Am J Psychiatry 153(suppl):94–102, 1996

Mayou R, Bryant B, Duthie R: Psychiatric consequences of road traffic accidents. BMJ 307:647–651, 1993

McCormick RA, Taber JI, Kruedelback N: The relationship between attributional style and post-traumatic stress disorder in addicted patients. J Trauma Stress 2:477–487, 1989

McCrae RR, Costa PT: Toward a new generation of personality theories: theoretical contexts for the five-factor model, in The Five-Factor Model of Personality: Theoretical Perspectives. Edited by Wiggins JS. New York, Guilford, 1996, pp 51–87

McFarlane AC: The aetiology of post-traumatic stress disorders following a natural disaster. Br J Psychiatry 152:116–121, 1988a

McFarlane AC: The longitudinal course of posttraumatic morbidity: the range of outcomes and their predictors. J Nerv Ment Dis 176:30–39, 1988b

Meehl PE: Schizotaxia, schizotypy, schizophrenia. Am Psychol 17: 827–838, 1962

Mikulincer M, Solomon Z: Attributional style and combat-related posttraumatic stress disorder. J Abnorm Psychol 97:308–313, 1988

Millon T: Manual for the MCMI-II. Minneapolis, MN, National Computer Systems, 1987

Mischel W, Shoda Y: A cognitive-affective system theory of personality: reconceptualizing situations, dispositions, dynamics, and invariance in personality structure. Psychol Rev 102:246–268, 1995

Orr SP, Clairborn JM, Altman B, et al: Psychometric profile of posttraumatic stress disorder, anxious, and healthy Vietnam veterans: correlations with psychophysiologic responses. J Consult Clin Psychol 58:329–335, 1990

Orr SP, Pitman RK, Lasko NB, et al: Psychophysiological assessment of posttraumatic stress disorder imagery in World War II and Korean combat veterans. J Abnorm Psychol 102:152–159, 1993

Peterson C, Seligman MEP: Causal explanations as a risk factor for depression: theory and evidence. Psychol Rev 91:96–103, 1984

Prins A, Kaloupek DG, Keane TM: Psychophysiological evidence for autonomic arousal and startle in traumatized adult populations, in Neurobiological and Clinical Consequences of Stress: From Normal Adaptation to Post-traumatic Stress Disorder. Edited by Friedman MJ, Charney DS, Deutch AY. Philadelphia, PA, Lippincott–Raven, 1995, pp 291–314

Resnick HS, Foy DW, Donahoe CP, et al: Antisocial behavior and post-traumatic stress disorder in Vietnam veterans. J Clin Psychol 45: 860–866, 1989

Robert JA, Ryan JJ, McEntyre WL, et al: MCMI characteristics of DSM-III posttraumatic stress disorder in Vietnam veterans. J Pers Assess 49: 226–230, 1985

Rotter JB: Generalized expectancies for internal versus external control of reinforcement. Psychological Monographs 80:1–28, 1966

Schnurr PP, Friedman MJ, Rosenberg SD: Premilitary MMPI scores as predictors of combat-related PTSD symptoms. Am J Psychiatry 150: 479–483, 1993

Shalev AY, Peri T, Canetti L, et al: Predictors of PTSD in injured trauma survivors: a prospective study. Am J Psychiatry 153:219–225, 1996

Silver SM, Salamone-Genovese L: A study of the MMPI clinical and research scales for post-traumatic stress disorder diagnostic utility. J Trauma Stress 4:533–548, 1991

Solomon Z, Mikulincer M, Avitzur E: Coping, locus of control, social support, and combat-related posttraumatic stress disorder: a prospective study. J Pers Soc Psychol 55:279–285, 1988

Solomon Z, Mikulincer M, Benbenishty R: Locus of control and combat-related post-traumatic stress disorder: the intervening role of battle intensity, threat appraisal and coping. Br J Clin Psychol 28:131–144, 1989

Solomon Z, Ginzburg K, Neria Y, et al: Coping with war captivity: the role of sensation-seeking. European Journal of Personality 9:57–70, 1995

Spitzer RL, Williams JBW, Gibbon M: Structured Clinical Interview for DSM-III-R, Version NP-V. New York, New York State Psychiatric Institute, Biometrics Research, 1987

Sutker PB, Bugg F, Allain AN: Psychometric prediction of PTSD among POW survivors. Psychological Assessment 3:105–110, 1991

Sutker PB, Davis JM, Uddo M, et al: War zone stress, personal resources, and PTSD in Persian Gulf War returnees. J Abnorm Psychol 104:444–452, 1995

Valentiner DP, Foa EB, Riggs DS, et al: Coping strategies and posttraumatic stress disorder in female victims of sexual and nonsexual assault. J Abnorm Psychol 105:455–458, 1996

Watson D, Clark LA: Introduction to "Special Issue on Personality and Pathology." J Abnorm Psychol 103:3–5, 1994

Watson D, Clark LA, Harkness AR: Structures of personality and their relevance to psychopathology. J Abnorm Psychol 103:18–31, 1994

Weiss DS, Marmar CR, Metzler TJ, et al: Predicting symptomatic distress in emergency services personnel. J Consult Clin Psychol 63:361–368, 1995

Wilson JP, Krauss GE: Predicting post-traumatic stress disorders among Vietnam veterans, in Post-Traumatic Stress Disorder and the War Veteran Patient. Edited by Kelly WE. New York, Brunner/Mazel, 1985, pp 102–147

Wise TN, Mann LS: The relationship between somatosensory amplification, alexithymia, and neuroticism. J Psychosom Res 38:515–521, 1994

Wolfe VV, Gentile C, Wolfe DA: The impact of sexual abuse on children: a PTSD formulation. Behavior Therapy 20:215–228, 1989

Yehuda R, Steiner A, Kahana B, et al: Alexithymia in Holocaust survivors with and without PTSD. J Trauma Stress 10:93–100, 1997

Yehuda R, McFarlane AC: Conflict between current knowledge about posttraumatic stress disorder and its original conceptual basis. Am J Psychiatry 152:1705–1713, 1995

Zeitlin SB, McNally RJ, Cassiday KL: Alexithymia in victims of sexual assault: an effect of repeated traumatization? Am J Psychiatry 150:661–663, 1993